REMARKS

The present application was filed on November 26, 2003 with claims 1 through 20. Claims 1 through 20 are presently pending in the above-identified patent application.

In the Office Action, the Examiner rejected claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Wang et al. (Clustering by Pattern Similarity in Large Data Sets, ACM SIGMOD' 2002 June 4-6, Madison Wisconsin, USA) in view of Goh et al. (DynDex: A Dynamic and Non-metric Space Indexer).

Independent Claims 1 and 18-20

Independent claims 1 and 18-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wang et al. in view of Goh et al. Regarding claim 1, the Examiner acknowledges that Wang teaches clustering by pattern similarity in large data sets and acknowledges that Wang fails to specifically teach the defining subspace correlations between one of the objects in the set and each of (one) or more remaining objects in the set based on the identified subspace pattern similarities for use in identifying near-neighbor objects. The Examiner asserts that Goh teaches DynDex, an indexing method that deals with both the dynamic and non-metric aspects of the distance function. The Examiner asserts that it would have been obvious to identify the near neighbor object using the subspace correlation in (the) Wang method in order to support fast retrieval speed for high-dimensional data in a non-metric and dynamic space and support efficient similarity searches as well as context based searches via relevance feedback.

As the Examiner acknowledges, Wang is directed to clustering by pattern similarity. (See, Abstract.) While the processes of "clustering" and "finding the nearest neighbor" share the concept of pattern similarity, the results of the processes are *not* the same, as would be apparent to a person of ordinary skill in the art. For example, in "clustering," a given set of datasets are processed and grouped into clusters. Once the clustering is completed, however, the nearest neighbor of a given data item is still not known. Thus, as the Examiner previously acknowledged, "clustering" and the Wang reference do *not* disclose or suggest *defining subspace correlations between two or more of the objects in the set based on the identified subspace pattern similarities for use in identifying near-neighbor objects.*

Regarding the Examiner's previous assertion that, "once several objects have been linked together, we determine the distances between those new clusters by finding the

'nearest neighbors' across clusters to determine the distances between clusters," Applicants note that a "cluster" is defined as "a *group* of the same or similar elements gathered or occurring closely together." (See, dictionary.com; emphasis added) Thus, at best, a "cluster" is *not* an object, but a *group of objects*. The identification of *near-neighbor objects*, as required by the present independent claims, is *not* equivalent to the identification of a group of objects that are near neighbors in relation to another group of objects. In the latter case, the near neighbor(s) of an object are *not* known. In fact, finding a group of objects which are the nearest neighbors of another group of objects has limited value in determining the nearest neighbor of an object. Independent claims 1, 19, and 20 require *identifying subspace pattern similarities that the objects in the set exhibit in multi-dimensional spaces; and defining subspace correlations between one of the objects in the set and each of one or more remaining objects in the set based on the identified subspace pattern similarities for use in identifying near-neighbor objects*. Independent claim 18 requires *defining subspace correlations between one of the objects in the set and each of one or more remaining objects in the set based on the identified subspace pattern similarities; and using the subspace correlations to identify near-neighbor objects among the query objects and the objects in the set.*

Similarly, Goh teaches to perform clustering followed by a ranking of the determined clusters. (Section 3.3) Goh teaches that a *sequential scan of the cluster* is then performed. Furthermore, the clusters are ranked not based on all objects in the cluster *but on a subset R of objects* in the cluster (section 3.2). Therefore, Goh does *not* disclose or suggest *defining subspace correlations between* ***one*** *of the objects in the set and* ***each*** *of one or more remaining objects in the set.*

Thus, even as combined in the manner suggested by the Examiner, Wang et al. and Goh et al., alone or in combination, *do not teach every element of the independent claims.* Furthermore, based on the KSR considerations discussed hereinafter, the combination/modification suggested by the Examiner is not appropriate.

KSR Considerations

An Examiner must establish "an apparent reason to combine ... known elements." *KSR International Co. v. Telcflex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007). Here, the Examiner merely states that it would have been obvious to identify the near neighbor object using the subspace correlation in (the) Wang method in order to support fast retrieval speed for

high-dimensional data in a non-metric and dynamic space and support efficient similarity searches as well as context based searches via relevance feedback.

Applicants are claiming a new technique for finding near-neighbors in a set of objects comprising identifying subspace pattern similarities that the objects in the set exhibit in multi-dimensional spaces.

There is *no* suggestion in Wang or in Goh, alone or in combination, to identify subspace pattern similarities that objects in a set exhibit in multi-dimensional spaces.

Wang's teaching to cluster by pattern similarity ***teaches away*** from the present invention. Goh's teaching to scan objects in high-ranked clusters ***teaches away*** from the present invention. The *KSR* Court discussed in some detail United States v. Adams, 383 U.S. 39 (1966), stating in part that in that case, "[t]he Court relied upon the corollary principle that when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." (KSR Opinion at p. 12). Thus, there is no reason to make the asserted combination/modification.

Thus, Wang et al. and Goh et al., alone or in combination, do not disclose or suggest identifying subspace pattern similarities that the objects in the set exhibit in multi-dimensional spaces; and defining subspace correlations between one of the objects in the set and each of one or more remaining objects in the set based on the identified subspace pattern similarities for use in identifying near-neighbor objects, as required by independent claims 1, 19, and 20, and do not disclose or suggest creating a pattern distance index to identify subspace pattern similarities that the objects in the set exhibit in multi-dimensional spaces; defining subspace correlations between one of the objects in the set and each of one or more remaining objects in the set based on the identified subspace pattern similarities; and using the subspace correlations to identify near-neighbor objects among the query objects and the objects in the set, as required by independent claim 18.

Dependent Claims 2-17

Dependent claims 2-17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wang et al. in view of Goh et al.

Claims 2-17 are dependent on claim 1 and are therefore patentably distinguished over Wang et al. and Goh et al., alone or in combination, because of their dependency from independent claim 1 for the reasons set forth above, as well as other elements these claims add in

combination to their base claim.

All of the pending claims, i.e., claims 1-20, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

Date: August 25, 2010

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